

## Mail Alert System

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### Field of the Invention

10 The present invention is in the area of network document services,  
and pertains more particularly to an electronic mail (e-mail) service utilizing  
machine-intelligent filters to determine forwarding and notification for  
receipt of e-mail.

### Background of the Invention

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20 The public network system over telephone lines known as the  
Internet, and particularly the portion of the Internet known as the World  
Wide WEB (WWW) has experienced rapid growth, and with this growth all  
sorts of electronic document services have been developed and provided to  
users. E-mail is arguably the most familiar of these services, and is provided  
by every Internet Service Provider (ISP) and in other ways as well. E-mail  
services may also be provided on other networks, such as Wide Area  
Networks (WANs) and the like.

25 Even though e-mail services have become commonplace and reliable,  
there are still some limitations. For example, e-mail services typically  
require the user to actively look up whether he or she has received e-mail,  
unless the user is permanently connected to the Internet. In some service  
packages, e-mail is delivered to a mobile device, like a palmtop-computer or  
a telephone. However costs in such systems are high per message and size,  
30 and if the user has no facility to review and veto delivery, he or she may

receive attachments of several dozen kilobytes or even more incurring very high delivery costs. What is clearly needed is a smart filter system that operates firstly to decide, based upon certain criteria set up by the user, if, when e-mail is received, the user is to be notified by pager or similar services, and secondly if and where to forward mail. Such an enhancement in e-mail services allows the user to avoid being disturbed by unimportant messages, as well as to avoid high costs of unsolicited and or unwanted mail reception on expensive wireless systems or other remote systems.

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### Summary of the Invention

In a preferred embodiment, a system for receiving and forwarding e-mail messages for a subscriber is provided. The system comprises a server connected to a network; and a Mail Alert code set resident and operable on the server. The MailAlert code set is adapted to compare characteristics of e-mail messages received for the subscriber to specific message characteristics provided by the subscriber and pre-stored on the server, to send a message to the subscriber when a characteristic match is found, and to execute following instructions from the subscriber for forwarding of the message received for which a match was found. In one embodiment he message sent to the subscriber on finding a characteristic match is sent to a pager carried by the subscriber.

On receiving a page that a matched message has been intercepted, the server running the MailAlert code set waits for instructions from the subscriber. The subscriber may call in, log in by such as name and password, and then select specific forwarding for the intercepted and matched message. Forwarding may be to any or any combination of a number of devices

capable of receiving the e-mail message. The subscriber, for example, may have the message forwarded to a hand-held or notebook computer carried and operated by the subscriber, and also to a postoffice on another server or ISP

5           In various embodiments of the invention facility is thus provided for a subscriber to avoid having long messages sent to a remote device, such as a hand-held computer or notebook computer, and may thereby gain cost control over such message transfers. Another distinct advantage is that the subscriber, in the case of Internet services, becomes once-removed from his  
10       own Internet Service Provider (ISP), and can than change providers and e-mail systems, and still receive his e-mail seamlessly, and may have mail delivered to several places or any combination. A user may, for example, simply supply a criteria that all mail be intercepted and held for later instructions, and thereby gain control of delivery points.

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#### Brief Description of the Drawing Figures

Fig. 1A is a first of two portions of an example of software, in pseudo code, as it might be used in a preferred embodiment of the present  
20       invention.

Fig. 1B is a second portion of an example of software, in pseudo code, as it might be used in a preferred embodiment of the present invention.

Fig. 2 shows a system topology including interconnection of all units in a preferred embodiment of the present invention.

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#### Description of the Preferred Embodiments

In a preferred embodiment a server is used, connected to a network such as the Internet as well as to the phone system to perform the required functions of the invention

As can be seen from the Figures and as described below, most of the  
5 implementation of embodiments of the present invention is in  
interconnection of apparatus, and in integration of the apparatus by unique  
software resident and executed on a server. It will be apparent to those with  
skill in the art that there are many ways to partition such a system, and both  
the topology and the software partition can be changed substantially without  
10 really changing the resulting function of the complete system. Therefore the  
following descriptions have to be viewed as only one embodiment among  
many possible embodiments .

In Figs. 1A and 1B, a rich pseudo code is used to illustrate how the  
core software is built, with addition of most-used modules. Lines 106  
15 through 114 define the program objects. Lines 119 through 158 show a list  
of concurrent and invoked tasks. In line 106 MailAlert is defined as the  
principle code routine in the embodiment described. Mail Server described  
in line 108 could be a basic version of UNIX™ SendMail, a widely used  
standard mail software.  
20 SendMail does receive mail from the Internet, typically using Simple Mail  
Transfer Protocol(SMTP).

In the embodiment described herein of the present invention, when e-  
mail is received, a copy is typically forwarded to the customer's normal base  
address. A copy is also retained on the server, which is then analyzed by the  
25 MailFilter code routine on line 110. A match of pre-programmed criteria  
with mail message characteristics generates an Alert, which on Line 111 is  
used to generate a page to a paging unit carried by the subscriber.  
Additionally, each page is complemented with a unique ID stamp for

identification. In line 113 and 114 the subscriber can request either a fax back or a forwarding of the specific message by phone using the id stamp from line 112. That could happen in several ways. In one instance, the user would call an operator, identify himself, tell the operator the ID stamp of the requested message, and tell also the means, fax, e-mail or similar, and location of the forwarding, by e-mail address, fax number or similar. In the other instance, he would call into a voice-response system, identify himself by either touching or speaking his customer id, then entering the message ID stamp, and then selecting one of several pre-selected destinations, or enter a method and an address again by means of touching or speaking.

Procedure MailAlert on lines 119 through 127 basically repeats all basic steps indefinitely. In line 121 are the tasks of Receive, Forward and Store Mail, which can be handled by standard packages such as SendMail of UNIX™. Other similar products can be substituted, or modified or adapted to perform in the desired manner.

In line 133, a Filter Mail procedure filters new incoming mail, then looks up the customer for whom it was received in the customer database, gets stored customer records including pre-stored e-mail filtering criteria, and checks for a match, storing relevant results in the alert table.

In line 138 the task SendAlerts is continuously taking record by record from the AlertTable and emptying into paging systems, according to instructions stored in that record by FilterMail from the customer record.

The task MailAlert Auto Attendant on lines 144-149 takes customer calls, and based on customer ID and Alert ID then does either a fax or mail forward of the relevant messages. Optionally, attachments can be included to be expanded or dropped.

The task MailAlert Fax Back Server is then used to actually work off the queue of faxes to be sent to customers.

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Fig. 2 shows how a typical topology might look in a preferred embodiment of the present invention. A mail sender can be sending e-mail from workstation or PC 210, via Internet connection 220 to Internet Service Provider (ISP) 202. Although in this example the connection is through the well-known Internet, practice of the present invention is not limited to use with the Internet. The MailAlert system of the invention may be practiced wherever e-mail is used, regardless of the nature of the Network. The Internet is exemplary. The mail is then forwarded via link 221 to "backbone" 201, and on to MailAlert ISP 203 via connection 222 to the backbone. Inside MailAlert ISP the mail is received by Server 215 via connection 223 from the subnet 203. The MailAlert software then forwards a copy to the subscriber (If we call the same person both subscriber and customer, confusion is sure to result. on workstation 212, via connection 227, the subscriber's ISP 204, connection 226, backbone 201, connection 222, MailAlert ISP 203 and connection 223. At the same time, if a match between criteria and message characteristics is found, the system alerts via telephone and paging network 232 the subscriber's pager 217. The subscriber then can call in and have the message forwarded to fax 216 via telephone network connection 231, or he can have it forwarded to an alternate mail address, in this example is represented by pocket organizer 211, which has a wireless link to ISP 204. That (what is "that") then connects in normal manner from server 215.

If the subscriber has Internet service from the same ISP as MailAlert, he could connect like workstation 213 via connection 225.

The here-presented system provides an ability to selectively filter information based on e-mail, and to notify a subscriber of availability of such selected information, giving the subscriber the subscriber an option to have the message forwarded either by e-mail or fax to a specific location. For

example, if a subscriber expects a document as an attachment by e-mail, but is only interested in comments contained in the copy (body) of the message, he may setup a filter as following: Filter1:Sender=

XYZ:Subject=ABC:Attachment=Yes; . This Filter would tell the filter

5 software to look for matches in this subscriber's incoming mail. Once a message is received that matches the criteria, the subscriber will receive a page that could look like : MsgID=1234, Filter1. The subscriber then can call the Auto Attendant and identify himself with Customer ID and password, upon which he will be prompted to enter the message ID. Next  
10 he can select means of delivery, like e-mail or fax, and then enter numbers or addresses, or select one of a limited set of preprogrammed numbers or addresses.

After the subscriber makes all of the needed selections and entries, the system will immediately start to process his request, and within seconds  
15 delivery should begin. Alternatively, instead of using a pager, many models of new digital phones have paging facilities, so the message could include the call back number, which can be dialed in single button access. In another embodiment two-way pagers may be used to allow selecting immediate forwarding based on preprogrammed numbers or addresses.

20 In yet another embodiment, mail messages or parts of mail messages meeting certain criteria can be included with the notification message.

It will be apparent to those with skill in the art that there are many alterations that may be made in the embodiments described herein without departing from the spirit and scope of the invention. For example,  
25 programming of the filter criteria can be achieved in any one of several ways, all of which should be familiar to those with skill in the art. Programming of all of the several functional modules of the Mail Alert System according to embodiments of the invention can be done in many different ways, according

to individual preferences of programmers, while falling within the scope of the invention. Moreover, there are alternatives that may be taken in hardware connection, also while falling within the spirit and scope of the invention. The invention, therefore, is defined by the scope of the following

5 claims.